

What is Claimed is:

1. A point-to-multipoint satellite communication system,
comprising:

a first satellite antenna for generating a wide beam communication
5 signal to illuminate a plurality of satellites;

means for generating a return communication signal from each of the
plurality of satellites;

a second satellite antenna for receiving the return communication
signal from only one of the plurality of satellites; and

10 a satellite antenna repositioning system for repositioning said second
antenna when the sun transits within the beamwidth of said second antenna.

2. The system of claim 1, wherein a diameter of the second
satellite antenna is greater than a diameter of the first satellite antenna.

3. A point-to-multipoint satellite communication system,
comprising:

a first satellite antenna for generating a wide beam communication
signal to illuminate a plurality of satellites;

20 means for generating a return communication signal from each of the
plurality of satellites;

a second satellite antenna, directed to a first one of the plurality of
satellites, for receiving said return communication signal from said first
satellite; and

25 a third satellite antenna, directed to a second one of the plurality of
satellites located proximate to said first satellite, for receiving said return
communication signal from said second satellite only during sun transit
outages of said second antenna.

30 4. The system of claim 3, wherein diameters of the second and
third satellite antennas are greater than a diameter of the first satellite
antenna.

5. A method of performing satellite communication in a point-to-multipoint communications system, comprising the steps of:

aligning a first satellite antenna to illuminate a plurality of satellites;

transmitting a communication signal from the first satellite antenna to

5 said plurality of satellites;

broadcasting a return signal from each of said plurality of satellites based on the communication signal;

aligning a second satellite antenna to receive the return signal from only a first one of the plurality of satellites;

10 repositioning said second satellite antenna to receive the return signal from only a second of the plurality of satellites during periods when the sun transits behind said first satellite; and

receiving the return signal from said second satellite at said second satellite antenna during said periods.

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6. A method of performing satellite communication in a point-to-multipoint communications system, comprising the steps of:

aligning a first antenna to illuminate a plurality of satellites;

transmitting a communication signal from said first antenna to the

20 plurality of satellites;

broadcasting a return signal from each of the plurality of satellites in response to the communication signal;

aligning a second antenna to receive the return signal from a first one of the plurality of satellites;

25 receiving the return signal from said first satellite at said second antenna when the sun is outside the beamwidth of said second antenna;

aligning a third antenna to receive the return signal from a second one of the plurality of satellites; and

30 receiving the return signal from said second satellite with said third antenna when the sun is within the beamwidth of said first satellite.

7. An earth station for use in a point-to-multipoint communication

system including a small satellite antenna for transmitting a wide beam communication signal and a plurality of adjacent geostationary satellites for retransmitting the communication signal from the small satellite antenna, the earth station comprising:

- 5 a large satellite antenna;
- a receiver for receiving communication signals from one of the plurality of adjacent geostationary satellites; and
- a satellite antenna repositioning system for repositioning the satellite antenna during a period of sun transit outage.

8. An earth station for use in a point-to-multipoint communication system including a small satellite antenna for transmitting a wide beam communication signal and a plurality of adjacent geostationary satellites for retransmitting the communication signal from the small satellite antenna, the earth station comprising:

- 15 a first large satellite antenna directed to a first one of the plurality of adjacent geostationary satellites;
- a second large satellite antenna directed to a second one of the plurality of adjacent geostationary satellites; and
- 20 a receiver for receiving communication signals at one of said first and second antennas, said receiver including an antenna switch selector for selectively activating said first and said antennas, the selector activating the second antenna during periods when the sun transits within a beamwidth of said first antenna.

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